

What is claimed is:

1. A method for fabricating a thin line structure, comprising the steps of:  
preparing a given silicon base,  
forming, on said silicon base, a strain-relaxed silicon germanium layer with  
penetrated dislocations,  
forming a metallic layer on said silicon germanium layer to form a  
multilayered intermediate structure which is made of said silicon base, said  
silicon germanium layer and said metallic layer,

and

heating said multilayered intermediate structure to diffuse metallic elements  
of said metallic layer through said penetrated dislocations of said silicon  
germanium layer and to form a thin line structure made of metallic silicide at a  
boundary face between said silicon base and said silicon germanium layer.

2. The fabricating method as defined in claim 1, wherein the density of  
said penetrated dislocations of said silicon germanium layer is set within  
 $10^{-12}$ - $10^{-8}/\text{cm}^2$ .

3. The fabricating method as defined in claim 2, wherein the germanium  
content of said silicon germanium layer is set within 20-70 atomic percentages.

4. The fabricating method as defined in claim 1, wherein said thin line  
structure is formed along the <011> crystal orientation of silicon crystal.

5. The fabricating method as defined in claim 1, wherein said metallic  
layer is made of at least one selected from the group consisting of Ni, Co, Ti, Pt,  
Fe and Pd.

6. The fabricating method as defined in claim 5, wherein said metallic  
layer is made of Ni.

7. The fabricating method as defined in claim 6, wherein said thin line  
structure is made of nickel silicide with at least one of NiSi phase and NiSi<sub>2</sub> phase.

8. A multilayered structure comprising:  
a given silicon base,  
a strain-relaxed silicon germanium layer with penetrated dislocations which  
is formed on said silicon base,  
and  
a thin line structure made of metallic silicide which is formed at a boundary

face between said silicon base and silicon germanium layer.

9. The multilayered structure as defined in claim 8, wherein the density of said penetrated dislocations of said silicon germanium layer is within  $10^{-12}$ - $10^{-8}/\text{cm}^2$ .

10. The multilayered structure as defined in claim 9, wherein the germanium content of said silicon germanium layer is within 20-70 atomic percentages.

11. The multilayered structure as defined in claim 8, wherein said thin line structure is along the <011> crystal orientation of silicon crystal.

12. The multilayered structure as defined in claim 8, wherein said thin line structure is made of metallic silicide containing at least one selected from the group consisting of Ni, Co, Ti, Pt, Fe and Pd.

13. The multilayered structure as defined in claim 12, wherein said thin line structure is made of nickel silicide.

14. The multilayered structure as defined in claim 13, wherein said nickel silicide contains at least one of NiSi phase and NiSi<sub>2</sub> phase.

15. A multilayered intermediate structure comprising:

a given silicon base,

a strain-relaxed silicon germanium layer with penetrated dislocations which is formed on said silicon base,

and

a metallic layer which is formed on said silicon germanium layer.

16. The multilayered intermediate structure as defined in claim 15, wherein the density of said penetrated dislocations of said silicon germanium layer is within  $10^{-12}$ - $10^{-8}/\text{cm}^2$ .

17. The multilayered intermediate structure as defined in claim 16, wherein the germanium content of said silicon germanium layer is within 20-70 atomic percentages.

18. The multilayered intermediate structure as defined in claim 15, wherein said metallic layer is made of at least one selected from the group consisting of Ni, Co, Ti, Pt, Fe and Pd.

19. The multilayered intermediate structure as defined in claim 18, wherein said metallic layer is made of Ni.